

PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Improvements relating to Electric Rotary Motors or Selsyn

We, MEZ NACHOD, narodni podnik, Nachod, Czechoslovakia. A Czechoslovakian corporation, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to rotary electric machines such as motors or selsyns.

In order to minimise the cost of production of such machines, particularly those of small dimensions, it is necessary to use the smallest possible number of production parts.

Hitherto, for instance, carbon brushes for such machines have been mounted on and secured to a bearing bracket of the frame of the machine by means of cylindrical brush holders which have been pressed into holes in the bracket, and the holders have been secured by means of screws, rivets, or equivalent means to the bracket or to the frame.

Both these methods are relatively expensive as, in the first case, it is necessary to drill precisely-dimensioned holes in the bearing bracket in order to locate the brushes in the required position, and in the second case, the use of connecting parts such as screws or rivets, and the machining of the bearing surfaces of the bearing bracket substantially increase the production cost. Further, the auxiliary terminal board, when provided, is provided with a terminal plate and is fixed to the stator end connections by string, tape or similar means, and the use of this further securing material again increases the production cost.

An object of the present invention is to obviate or mitigate the above shortcomings.

The present invention comprises a rotary electric machine having the end turns of the stator winding coated with or embedded in a ring of electro-insulating synthetic plastic material, and in which one or more of the following parts, viz: brush holders, brush holder supports or terminals are solely supported by the said insulating material.

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Embodiments of the method of execution of the invention will now be described by way of example with reference to the accompanying diagrammatic drawings in which,

Fig. 1 is a front elevation of an electric rotary motor or selsyn having the stator winding end turns or end connections coated with a ring of electro-insulating synthetic plastic material in which ring are located the brush holder supports;

Fig. 2 is a section on the line A—A of Fig. 1;

Fig. 3 is an enlarged detail of the part marked in broken lines in Fig. 2;

Fig. 4 is a front elevation of an embodiment in which a brush holder box is fitted directly into the electro-insulating coating of the stator end connections;

Fig. 5 is a section on the line B—B of Fig. 4;

Fig. 6 is an enlarged detail of the part marked in broken lines in Fig. 5;

Fig. 7 is a front elevation of a further embodiment in which a terminal for connection to the power source or to the brush holder is fitted into the electro-insulating coating of the stator end connections.

Fig. 8 is a section on the line C—C of Fig. 7 and

Fig. 9 is an enlarged detail of the part marked in broken lines in Fig. 8.

Referring to the drawings, the end turns or end connections of stator winding 11 are frequently, especially for motors for use in heavy media (e.g. a liquid), insulated against the surroundings by coating or spraying with an electro-insulating material, e.g. an epoxyde resin such as Dentacryl (Registered Trade Mark). The electro-insulating material forms an insulating layer around the end turns which layer has usually the form of the ring 12. By a suitable adaptation of the spraying or pouring mould, e.g. by boring holes in the wall of the mould, provision is made for further attachment of members in the form of screws 14 and 15 screwed into the support 13. After coating the stator winding heads by pouring or spraying

and hardening the electro-insulating material, the brush holder support 13 with screws 14 and 15 is fixed in the electro-insulating ring 12.

A loading spring 17 made of electrically conducting and elastic material such for instance as phosphor bronze, is fitted to the screw 14 by tightening the nut 16, which spring carries the brush 18, which, after assembly of the motor, bears against the surface of the commutator (end face type) or of the rotor collecting rings. The pressure of the spring 17 on the surface of the commutator or collecting rings can be regulated by tightening or loosening a nut 19 on a screw 15 which passes through an opening 20 in the spring 17.

If desired, a conductor 22 from a power source may be fixed on the screw 14 by nut 21 or otherwise clamped thereto.

If the machine is provided with a commutator or collecting rings of the cylindrical type, the box with brush holders 23 can be fitted directly in the ring 12 as shown in Figs. 4, 5 and 6 in a similar manner to that described above.

As cracking of the insulation of the connecting leads may sometimes occur owing to hardening of the insulation, it is sometimes advantageous to provide the electric machine with a terminal board which is fixed directly on stator. According to the invention, this terminal board is replaced, as shown in Figs. 7, 8 and 9, by screw terminals 24 provided with a nut 25 and a soldering eye 26 to which there is soldered the lead 27 from the stator winding 11. The said terminals with their components

are fixed in the ring 12 of electro-insulating material which also encloses and insulates the end turns of stator winding 11. The supply lead 29 is fixed with another nut 28 on the screw terminal 24 for connection to the power source or to the brush holders.

A great advantage of this invention is the fact that the connecting material by which the brush holders or the auxiliary terminal boards are usually fixed is not required. Further, machining of the bearing surfaces between the brush holders and the bearing bracket is not necessary. The brush holder support is fixed directly in the ring of electro-insulating material insulating the winding, thus eliminating the need for a terminal board to support the more usual type of brush holder, whereby further substantial savings on material and on wages during production are achieved.

WHAT WE CLAIM IS:—

1. A rotary electric machine or selsyn having the end turns of the stator winding coated with or embedded in a ring of synthetic plastic electro-insulating material, and in which one or more of the following parts, viz.: brush holders, brush holder supports or terminals are solely supported by the said insulating material.

2. A rotary electric machine or selsyn substantially as described herein, and in any one of the forms shown diagrammatically in the accompanying drawings.

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FIG. 1.

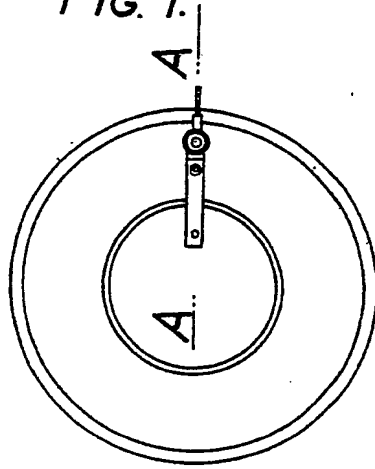


FIG. 2.

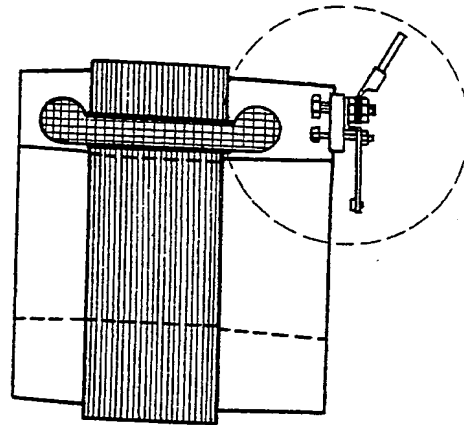


FIG. 3.

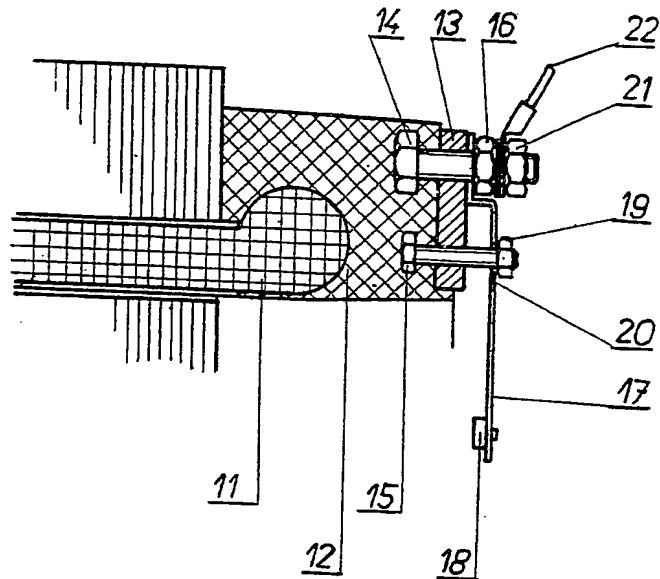


FIG. 7.

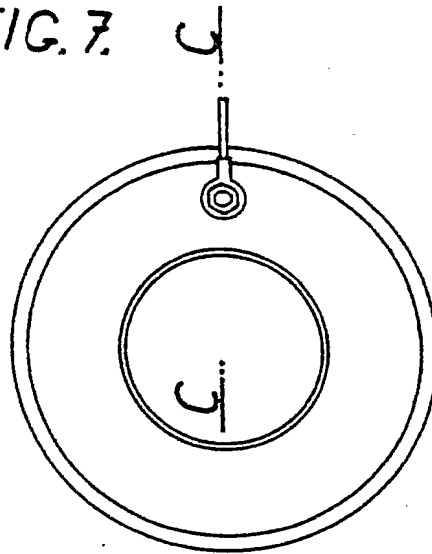


FIG. 8.

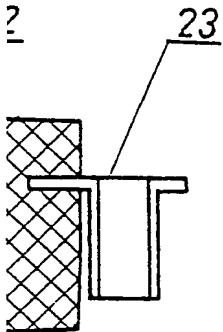
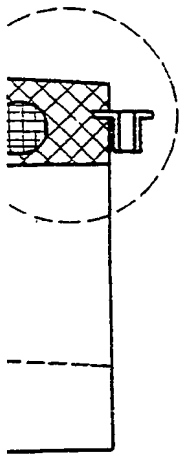
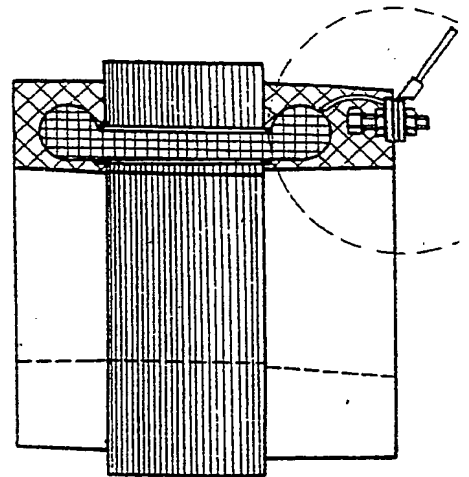
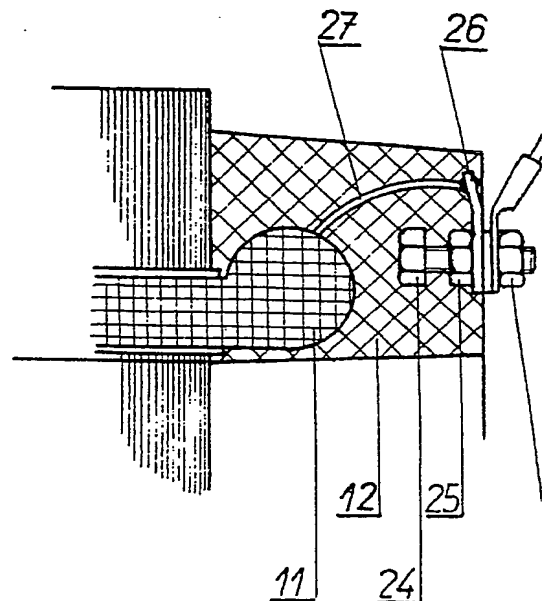


FIG. 9.



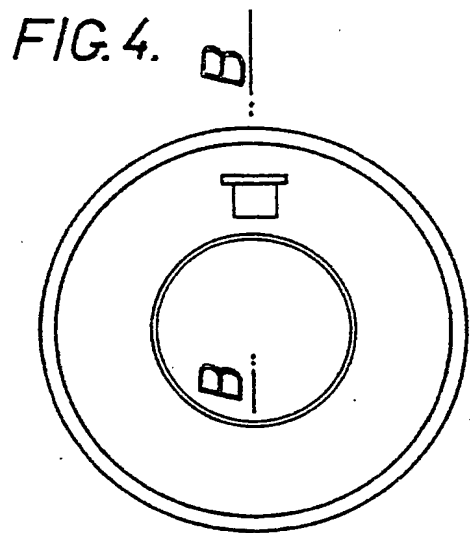


FIG. 5.

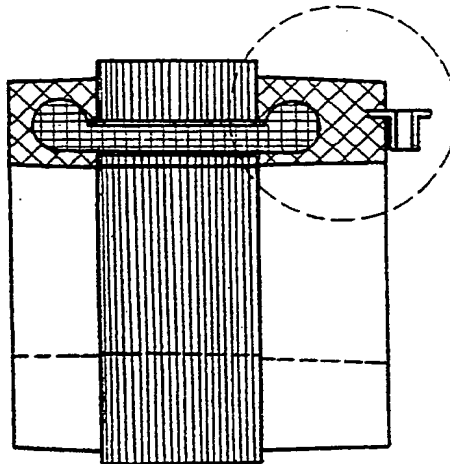


FIG. 7.

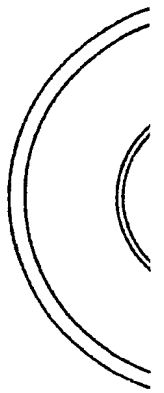
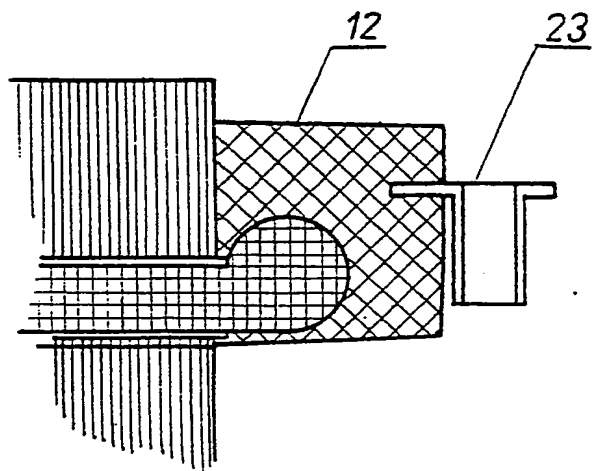


FIG. 6.



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FIG. 4.

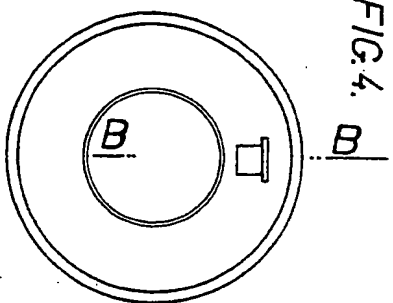


FIG. 5.

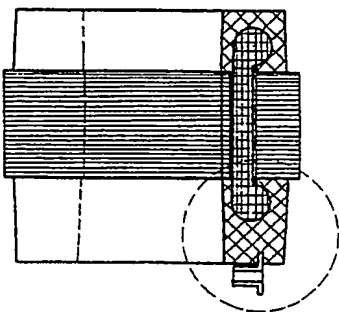


FIG. 7.

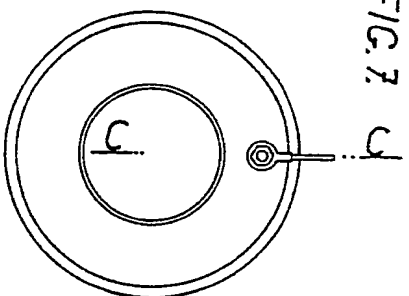


FIG. 8.

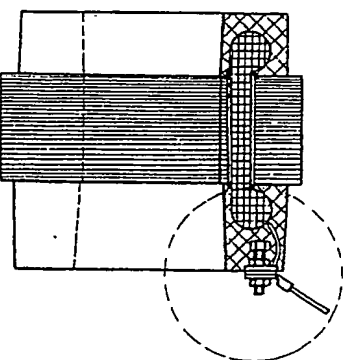


FIG. 6.

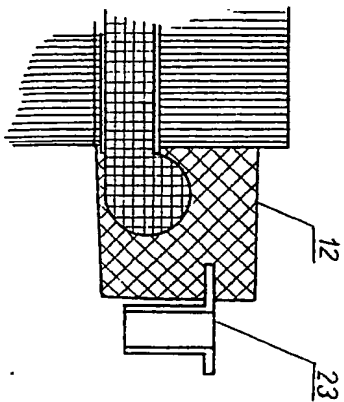


FIG. 9.

